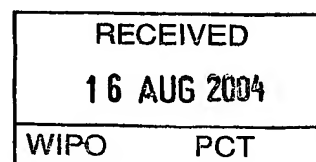




PCT/AU2004/001014

Patent Office
Canberra

I, LEANNE MYNOTT, MANAGER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. 2004902116 for a patent by SOLAR SAILOR PTY LIMITED as filed on 21 April 2004.



WITNESS my hand this
Eleventh day of August 2004

A handwritten signature in dark ink, appearing to be "LM" or similar initials.

LEANNE MYNOTT
MANAGER EXAMINATION SUPPORT
AND SALES

**PRIORITY
DOCUMENT**
SUBMITTED OR TRANSMITTED IN
COMPLIANCE WITH RULE 17.1(a) OR (b)

Advanced Technology Watercraft

Advanced Technology Watercraft

2004

April

Overarching Requirement

Unmanned/Autonomous vehicles at sea for warfare, exploration, research and monitoring.

MILITARY:

- IPB - the littoral.
- Mine warfare
- Anti-submarine warfare
- ISR&T
- SpecWar support
- Indications and Warning
- Vehicle for nextgen warships

GOVERNMENTAL:

- Hydrographic Survey
- Ocean Exploration
- Ocean Environmental Monitoring
- Ocean Resources monitoring
- Fisheries monitoring
- Ocean Climate Research

HOMELAND SECURITY:

- Chem/Bio sensing off-shore
- Shipping Lane monitoring
- Anti-swimmer and anti-sub

COMMERCIAL:

- Offshore Oil Platform
- Fisheries
- Archeological surveying
- Underwater cables
- Ocean resource exploration
- Ocean Tourism

3

Advanced Technology Watercraft

2004

April

The Fundamental Issue

Endurance, Endurance, Endurance

Advanced Technology Watercraft

2004

April

The Solution

- A Marine Vessel with Unlimited Endurance
 - A new class of marine vessel
 - Self-propelled
 - Self-generating electrical power for payloads

Advanced Technology Watercraft

2004

April

Design Overview

- Small hull forms – very low cost for payload
- Propulsion: Solar Sails primary; Solar Electric backup
- Electrical Power: Solar Electric primary, regenerative power backup
- Payload bay, including deployable sensors, and hull mounted sensors
- Scalable and adaptable
- Multi-mission capable
- Based on proven technology – “Solar Sailor”

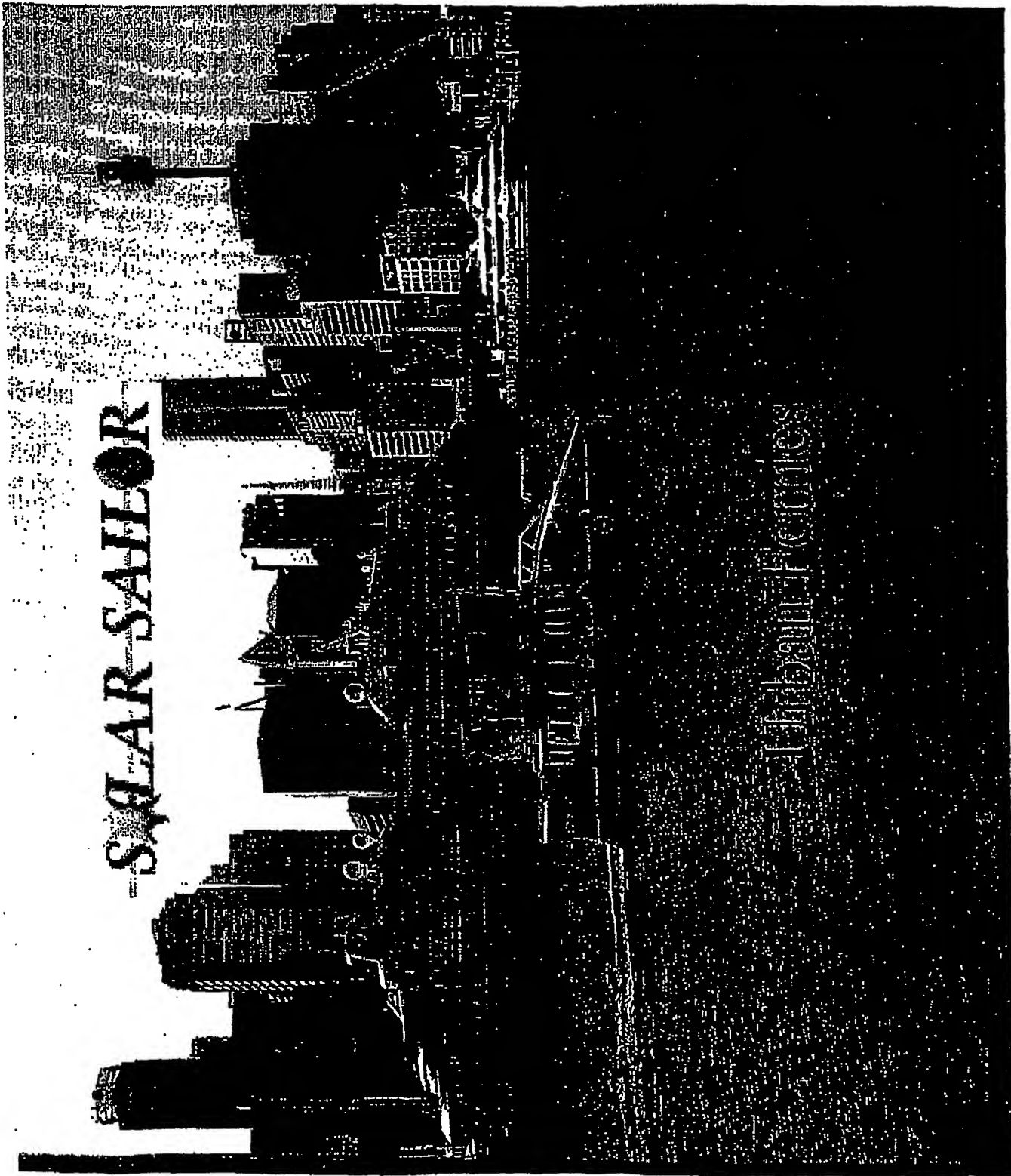
Advanced Technology Watercraft

2004

April

Adapting Proven Technology

SAILAR SAILOR



Advanced Technology Watercraft

2004

April



2003 – 6 year contract with Capt Cook Cruises

2002 – SEDA NSW Green Ambassador

2001 Winner Australian Design Award of the Year 2001 – Engineering

2001 Australian Technology Award – PWC/Technology Transactions - Finalist

2001 Australian Technology Showcase Patrons Award - Finalist

2000 Winner International Cargo Handling Co-ordination Association Award –Cargo Handling

2000 Winner Boating Industry Association of Australia Marine Awards – Best New Product 2000

1999 Winner Far Eastern Economic Review/Du Pont Asian Innovation Award – Gold Medal 2000

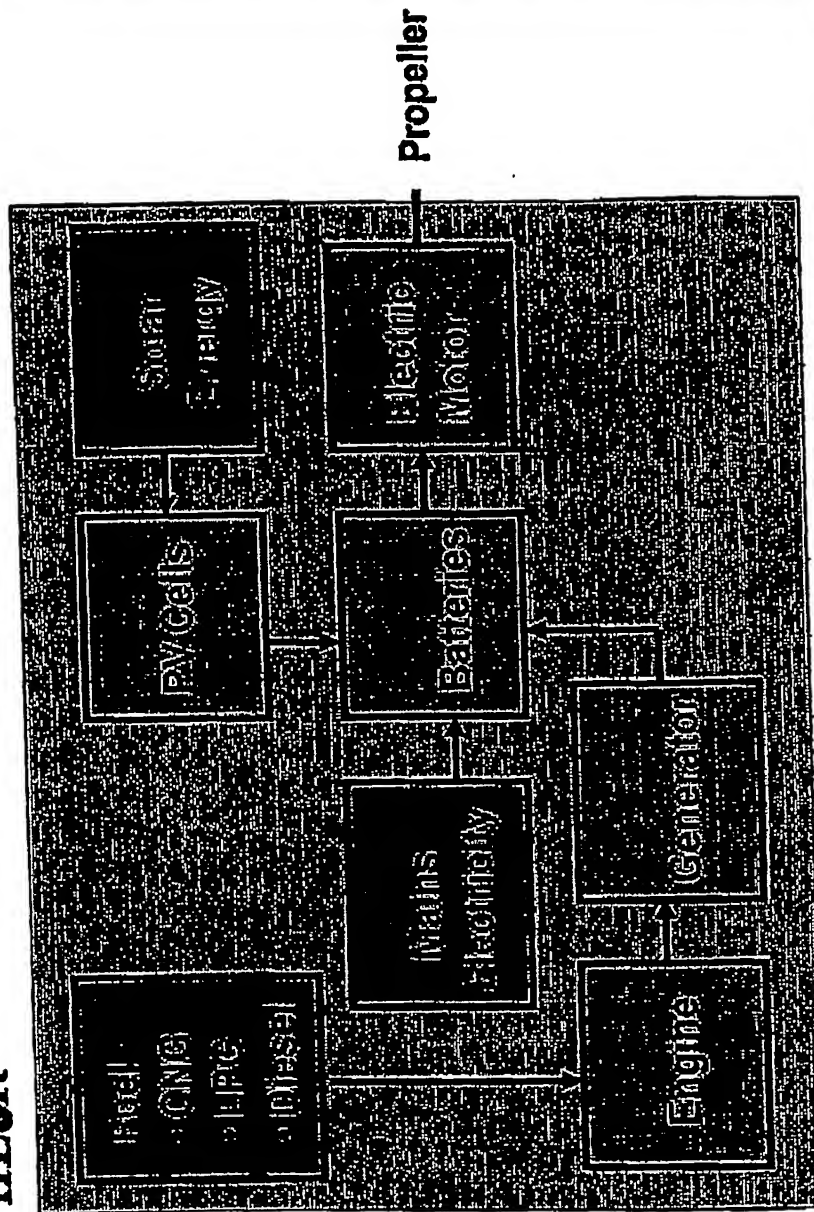
1997 Winner Advanced Technology Boat Race Canberra Australia – Major Prize 1997

Advanced Technology Watercraft

2004

April

SOLAR SAILOR



Proven Hybrid Power

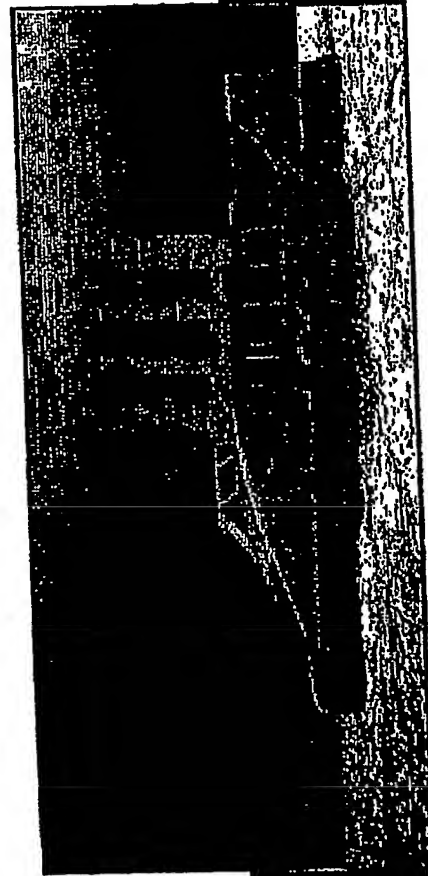
Advanced Technology Watercraft

2004

April

Proven Today**STAR SAILOR**

- ▶ Safe: Reliable ++, redundancy of power sources.
- ▶ Profitable – decrease costs & increase multipurpose use – consumer satisfaction.
- ▶ Environmental. Zero emissions at wharf – Proposition 65.
- ▶ Alternative fuels.
- ▶ Fits new paradigms – “blue highways”.
- ▶ Mobile power plant – emergency Carbon Credits
- ▶ Platform for new and fuel cell technology

**AUSTRALIAN
DESIGN AWARD**

THE



Vote for Innovation Today
License No. 181022
Standards Australia

Advanced Technology Watercraft **HAMV**

2004

April

“Hybrid Autonomous Marine Vehicle”

a new class of marine vessel

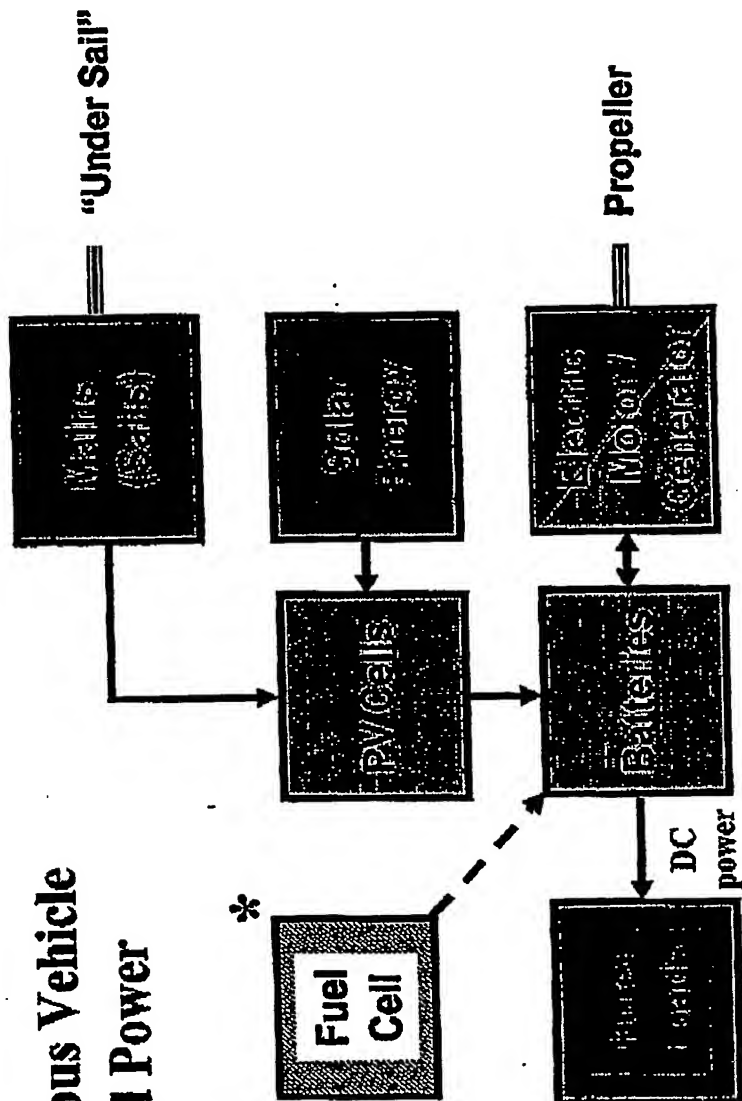
- Surface operation; submersible variant
- Remote control - GPS guided – intelligent controller
- Operate Solo, in Schools, or Networked
- Hybrid power – Operational endurance in years
- High speed on demand for short durations
- Self powered payload bay
- Data-link or burst download

Advanced Technology Watercraft

2004

April

Autonomous Vehicle Hybrid Power



* Some applications

Advanced Technology Watercraft

2004

April

Planned Variants

- ▶ Low-cost HAMV
- ▶ Stealth HAMV
- ▶ High-capacity HAMV

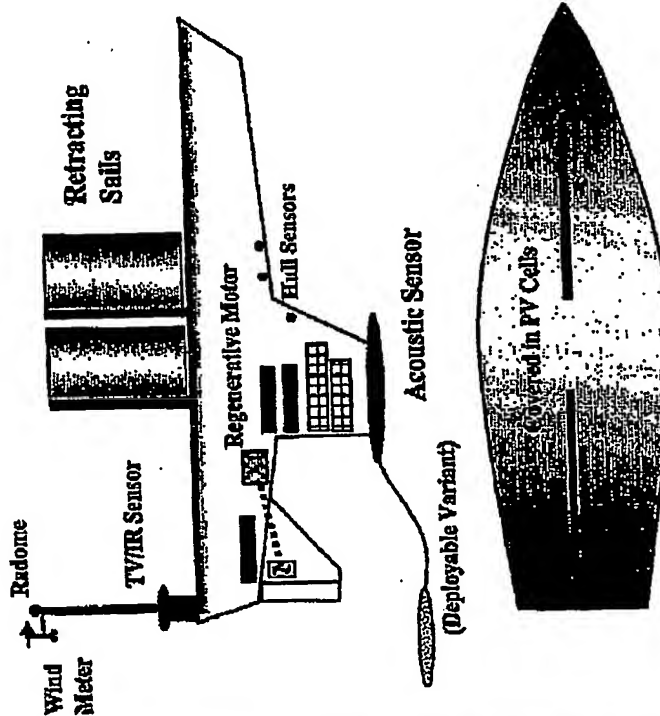
Advanced Technology Watercraft

April 2004

"L-HAMV" - Low Cost HAMV

SPECIFICATIONS:

Hull materials: fiberglass
Length: 16-30 feet
Beam: 7-15 feet
Weight: 400-2000 kg
Payload: 100-500kg
Propulsion: Wind and Solar Electric
Wind - reach hull speed, 4-6 kts, at ~15 kt winds
Solar - 2/3 kts for 24 hours
Average speed: 1.5-3 knots (depending on size)
Max speed: hull speed, approx 4-6 kts
Power for payload: .5-1.2 kw
Standby power: 20-40 Ohp fuel cell (optional)
Guidance system: GPS remote with automatic sequencing, and tracking storage.
Range: Unlimited
Life expectancy: 15 years



Advanced Technology Watercraft

April 2004

"S-HAMV" Stealth HAMVSpecifications:Hull materials: compositeLength: 10 foot $\pm 20\%$ Width: 3 ft $\pm 20\%$ Weight:400kg $\pm 20\%$ Payload bay: 5ft x 1ft $\pm 20\%$ Payload weight: 100kg \pm

20%

Propulsion: Hybrid electric fuel cell/ battery/solar/windWind - 1sqm wing - in 26knots trade wind - 1.7kw =3knots $\pm 20\%$ Solar - 1.2kW = 3knots $\pm 20\%$ Battery/fuel cell - auxiliary.Max speed: motor overrated 300% gives 20knots +

sprint speed

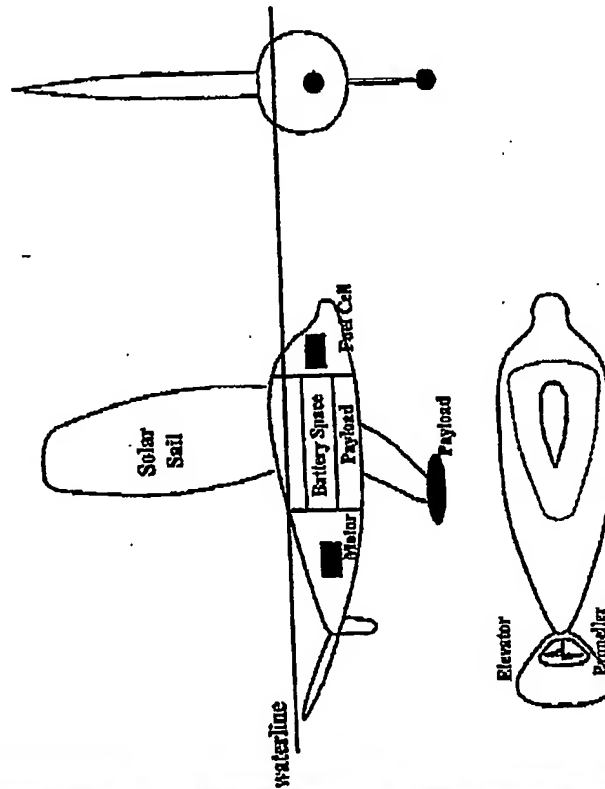
Power requirements: 1kW - 3knots $\pm 20\%$ 30kW -20knots $\pm 20\%$ Standby power: 10hp fuel cell $\pm 20\%$ Guidance system: GPS remote with automatic

sequencing, and tracking storage.

Range: Indefinite at 10knots, estimated x miles

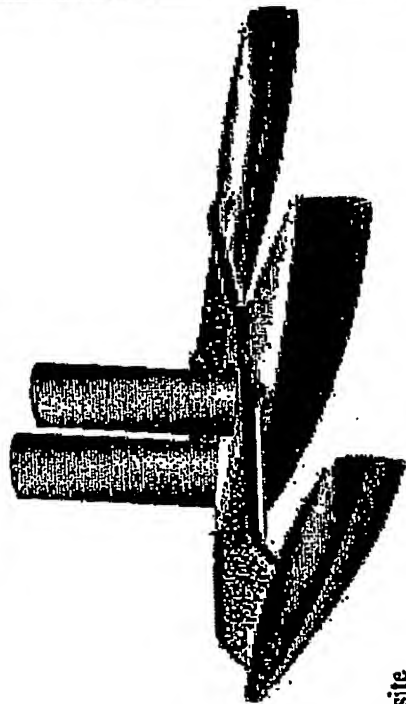
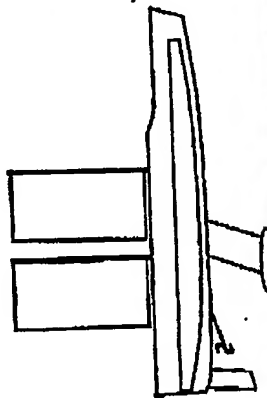
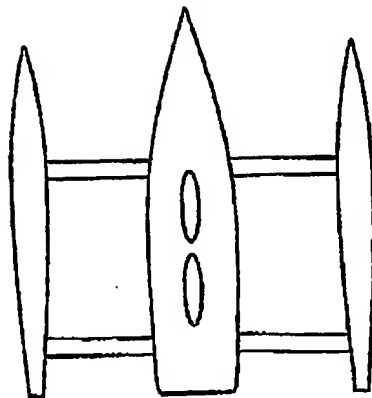
(200-1,000 depending on fuel cell) at 6-8 knots, est. x

(100-1,000) meters at 20 knots

Average speed: 3 knots $\pm 20\%$ Life expectancy: 20 years

Advanced Technology Watercraft

April 2004

"HC-HAMV" – High Capacity**HAMV****SPECIFICATIONS:**Hull materials: compositeLength: 35 feetBeam: 29 feetWeight: 1500 kgPayload: 500kgPower for payload: 1-2 kwStandby power: 20-40 Ohp fuelcell (optional)Guidance system: GPS remote with automatic sequencing, and tracking storage.Propulsion: Wind and Solar ElectricWind -10-15 kts, at 15-25 kt windsSolar - 4 kts for 24 hoursAverage speed: 6 knotsMax speed: 25 ktsRange: UnlimitedLife Expectancy: 15 years

Advanced Technology Watercraft

2004

April

Applications

- Ocean surveillance
- Stealth operation, or visible deterrent
- Tracking and reconnaissance
- Payload Delivery
- Battlespace preparation
- Mobile power source
- Short or long-term loiter, (geostationary buoy)
- Remote sensor
- Perimeter defense
- Launch from air, ship, sub (S-HAMV)

Advanced Technology Watercraft

2004

April

Capabilities

- Travel anywhere in the world
- Monitoring and Surveillance with video, IR, acoustic, chem/bio sensors
- Research and Exploration with active bathymetry and sensors
- Station-keeping or area sweeps
- Use airborne and space communications networks
- Maintain continuous connectivity with datalinks, or process sensor information onboard for periodic communication – or both
- Multi-task: military and ocean research concurrently, or time-share